

REMARKS

Claims 13, 15-22 and 35-36 are currently pending in the present Application, with claims 25-34 standing withdrawn pursuant to Election/Restriction Requirement.

The Applicants have carefully reviewed the pending April 6, 2004 Office Action, and respectfully submit the foregoing amendments and following remarks in response thereto.

Specification Objection Regarding Antecedent Basis for Claim 13: The specification is objected to for failing to provide antecedent basis for claim 13's discharge layer "comprised of a predominately cellulose containing filter paper." January 22, 2004 Office Action at 2. The Applicants respectfully traverse this rejection on the grounds that this feature was (and continues to be) included in the original specification.

Claim 13 was added by Preliminary Amendment when the present case entered the U.S. National Stage and original claims 1-12 were canceled. Claim 13 is based on original claim 1, and includes claim 1's recitation of a discharge layer "comprised of a predominately cellulose containing filter paper." Original claim 1 (and thus, current claim 13) is supported by the specification's description of cellulose filter paper which contains 50% or more cellulose, *i.e.*, is "predominately" cellulose. *See, e.g.*, Specification at 3:19-21. Sufficient antecedent basis therefore was originally present in, and continues to be present in, the specification. In view of the foregoing, withdrawal of the pending specification objection is respectfully requested.

Rejection Under § 112, First Paragraph: The Applicants respectfully traverse the rejection of claim 36 due to alleged failure to comply with the written description requirement, on the grounds that the written description is adequate, and further on the grounds that this rejection is tantamount to importing a claim limitation from the specification into claim 36.

Claim 36 was added to recite claim scope which was not claimed in claim 13. Specifically, while claim 13 was narrowly drawn to a preferred embodiment's cellulose-containing compressed filter paper weight, claim 36 removed claim 36's upper weight range limit. Claim 36 is well supported in the written description, which discusses the advantages of high weight-per-unit-area filter paper, without specific numeric limits (it being well-known in the art such papers can be produced with densities of 500g/m² or more), and then describes *as an example of an advantageous embodiment*, a filter with a filter paper density in the range of 50-200 g/m². Compare, e.g., Specification at 2:16-3:11; 4:9-16; 4:24-5:2; 5:16-24 (describing the advantages of combining upstream melt-blown materials with increasingly finer-filtering cellulose-containing paper filter material on an outlet side of the filter element, the advantages if using of higher density, compressed cellulose papers (*i.e.*, the denser the outlet filter paper portion the better), and the advantage of being able to tailor the filter material characteristics to match the fluid to be filtered, e.g., by increasing the filter fineness of the outlet layer if needed by increasing size/amount of cellulose fibers on (and hence weight of) the filter paper – all without use of numeric limitations); with *id.* at 4:17-23; 6:15-20 (describing a *particular* embodiment in

which the filter paper density has been tailored for the specific application to be between 50-200 g/m²), Thus, the specification discloses generally the use of increasing weight density outlet layer cellulose-containing filter paper, without limitation, in addition to the range set forth in the specific embodiment.

The Applicants further note that the present rejection is tantamount to requiring the Applicants to limit their claims to *only* the specific embodiments disclosed in the specification, *i.e.*, importing limitations from the specification into the claims, Limitation of the claims to the specific numeric range of the specific embodiment is not appropriate here, where the Applicants have included sufficient material in the written description for one of ordinary skill in the art to recognize the present invention from the description,

The Applicants respectfully submit that in view of the general teachings of the present specification, supplemented by the specific embodiment descriptions, the Examiner has not met the burden placed on Examiners (*see* MPEP §2163.04) to establish by a preponderance of the evidence that “a person skilled in the art would not recognize in an applicant’s disclosure a description of the invention defined by the claims.” MPEP §2163.04 (citing *In re Wertheim*, 541 F.2d 257, 263 (CCPA 1976)). Reconsideration and withdrawal of the § 112 rejection of claim 36 is therefore respectfully requested.

Rejection Under § 112, Second Paragraph: The Applicants respectfully traverse the rejection of claims 13, 15-22 and 35-36 on the following grounds.

Redundancy of Claim 15: Claim 15 is identified as redundant to claim 13. Claim 13 recites a plurality (*i.e.*, two or more) of filter media layers,

whereas claim 15 recites “at least three” layers. Claims 13 and 15 thus have different scopes. Claim 15 therefore is not redundant to claim 13.

“Up to 50%” Issue in Claim 21: Claim 21 has been amended, solely for clarity and without express or implied surrender of claim scope, to recite that the synthetic fiber content may approach, but not equal, 50%. As amended, the claim now reads “up to but not including 50%”

Use of the term “about” in claims 13 and 35-36: The pending Office Action maintains that the Applicants’ use of the term “about” “is unacceptable since it would lead to ranges or tolerances [which] were variable and therefor[e] indefinite.” January 22, 2004 Office Action at 7. The Applicants respectfully note that the mere use of a relative term does not *per se* result in an indefinite claim.

As discussed in the MPEP, the term “about” is perfectly acceptable as a clear, but flexible expression of claim scope, where one of ordinary skill can discern from the disclosure the claim scope. MPEP § 2173.05(b) (citing, in subpara. A, *Ex parte Eastwood*, 163 USPQ 316 (Bd. App. 1968) and *W.L. Gore & Assoc. v. Garlock*, 721 F.2d 1540 (Fed. Cir. 1983)). Specifically, the standard applicable here is “whether one of ordinary skill in the art, in view of the prior art and the status of the art, would nevertheless be appraised of the scope of the invention.” *Id.* Further, the MPEP advises that it is in close cases, where, for example, the claims are distinguished primarily on the basis of ranges and there is close prior art, that questions of indefiniteness become more acute. *Id.*, at A.

In the present case, the claims are not being distinguished primarily on

the recited numerical ranges, but rather on the overall approach to filter design, wherein combination of elements result in an engineered sequence of filtration properties that enhance overall filter performance. Thus, there is no numerically-close art at issue, and therefore no need to require strict, inflexible numerical limitations to avoid uncertainty as to where prior art ends and the present invention begins.

Accordingly, the essential inquiry here is whether one of ordinary skill in the art “would nevertheless be appraised of the scope of the invention.” One of ordinary skill reviewing the present disclosure would be aware that the invention is directed to the use of “compressed” filter papers, and that the invention lies not in a precise paper density, but in the use of compressed paper that is generally structurally adequate to perform the recited functions (filtration, structural stability, etc.). Thus, one of ordinary skill would readily understand that the invention could not be avoided by merely using a filter paper that is only slightly below the recited 50-200 g/m² range.¹

The Applicants respectfully submit that because one of ordinary skill could readily understand and “be appraised of the scope of the invention,” the

¹ The Applicants wish to thank the Examiner for his helpful suggestion to eliminate the “about” language as a way to resolve the pending rejection. However, as the above example illustrates, such an amendment would raise significant concerns with infringers potentially obtaining the benefit of the present invention (*i.e.*, the overall concept of its novel arrangement of filtration layers) by merely using filter papers just outside a numerically precise range and then arguing that the Applicants were estopped by the prosecution history from claiming infringement under the doctrine of equivalents. The presently pending claims were drafted with this concern in mind, with the term “about” being used, as permitted under § 112, to inform potential infringers that mere immaterial changes to parameters would not avoid the invention. Thus, the Applicants respectfully decline the Examiner’s suggestion to recite precise numerical limits.

Applicants' use of the term "about" in claims 13 and 35-36 meets the definiteness requirements of § 112, second paragraph, as the law currently stands.

Reconsideration and withdrawal of the pending rejection is respectfully requested.

Use of the term "compressed" in claims 13, 16 and 35-36: The Applicants respectfully submit this term is sufficiently clear to enable one of ordinary skill to practice the invention and determine the scope of the claims.

In the Response to Arguments portion of the pending Office Action, the Examiner has dismissed the Applicants' previous comments regarding the differences between compressed filter papers and non-compressed papers, asserting that all filter papers "are to some extent compressed during the manufacturing process." The Applicants respectfully submit that this is not accurate, as it is well known in the art that papers are frequently manufactured without compression, *e.g.*, by the float method, wherein a mass of paper or cellulosic is floated onto a screen, and water is withdrawn to leave a thin planar mass constituting the paper – all without compression (*i.e.*, the application of force to reduce the thickness of the paper mass).²

In contrast, the specification expressly identifies the sort of compression envisioned by the Applicants, wherein compressed filter paper with a density of 200 g/m² or more and minimal thickness is obtained by calendaring – a mechanical compression process. Specification at 4:24-5:2. Moreover, as noted

² For clarity purposes only, the Applicants have amended the claims to recite that the compressed filter paper is a "pre-compressed" filter paper.

in the specification, present application teaches that the compression must be sufficient to permit the paper layer to be strong enough to structurally reinforce the filter layers while also contributing filtration capacity (and thereby allowing previously non-productive volume in the filter to provide additional filtration capacity without enlarging the filter). *Id.* One of ordinary skill would readily recognize that uncompressed papers cannot provide such structural strength.

The Applicants respectfully maintain that the claims, when read in the context of the present specification, are more than sufficiently definite for understanding of the scope of the present claims by one of ordinary skill in the art (*i.e.*, one of ordinary skill can readily ascertain whether or not a filter paper has been compressed. Accordingly, reconsideration and withdrawal of the pending rejection is respectfully requested.

Definiteness of Terms of Art “Degree of Separation and “Storage Capacity”: As this late stage of the prosecution of the present Application, following multiple Office Actions and responses based on the present disclosure, the January 22, 2004 Office Action adds a new § 112 rejection which basically challenges the clarity of fundamental terms of art used to describe the invention.

The Applicant respectfully submits that these terms (“degree of separation” and storage capacity”) are so well known, understood, and used on a daily basis in the industry, that further amendment to incorporate dictionary-like definitions into the specification and/or the claims is neither warranted nor necessary, as there has not been, and there continues not to be, any question as to the ability of one of ordinary skill in this art to understand the terms and their

relationship to one another (as discussed in the Advantages of the Invention Section at specification pages 2-4), and to apply these terms in the practice of the present invention. Accordingly, withdrawal of this rejection is respectfully requested.

Rejections Under § 103(a): Claims 13, 15-17, 21 and 35-36 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 4,976,858 to Kadoya ("Kadoya"), in view of U.S. Patent No. 4,910,064 to Sabee ("Sabee") or Japanese patent publication JP 6-198108 ("Togashi"). In addition claims 18-20 and 22 stand rejected under § 103(a) as unpatentable over these references and admissions and European patent publication EP 338 479 ("Klimmek"), respectively.

The Applicant respectfully traverses these rejections on the grounds that these references do not teach or suggest all the features of the present invention.

The January 22, 2004 Office Action cites the Sabee reference as disclosing a non-woven fabric formed by a melt blowing process, and that it would have been obvious to modify the Kadoya filter to include the Sabee non-woven web. January 22, 2004 Office Action at 4-5.

Close review of Sabee, however, reveals that this reference does not disclose the melt-blown web of the present invention, but instead teaches how to make a multi-layer *fabric* in which a small fraction of melt-blown fibers are added to keep layers of much larger diameter, continuous parallel threads together. *See, e.g.*, Sabee Figs. 1, 5, 14 (creation of base layers of fabric by transversely laying layers of continuous threads upon one another); Figs. 9-12,

15-16 (melt-blown deposition of relatively small amounts of fibers to join the continuous thread layers to one another). Importantly, the configuration of fabric produced in Sabee does not result in the desired fiber consistency and filtration characteristics of the present invention.

The present invention's non-woven fibers are very fine, on the order of 2 μm or less. *See, e.g.*, Specification at 4:2-4. The resulting structure provides relatively large storage capacity due to the interaction of the fiber and interstitial gap sizes. For clarity, the Applicants have amended the independent claims 13 and 35-36 to more specifically recite that the present invention's melt-blown fibers have "a fiber diameter of about 2 μm or less," a fiber size well below Sabee's 50-100 μm continuous filament diameter and the 3-12 μm diameter of its layer-joining blown-on fibers.

In contrast, the primary elements of the Sabee fabric are closely-grouped parallel sheets of continuous filaments with a diameter of 50-100 μm . Sabee at 17:32-35. These sheets of the fabric are in turn held together of the small amount of random fibers melt-blown onto the surfaces of the sheets, whether even this fibers are considerably larger than those of the present invention. *Id.* at 17:30-32 (fiber diameters of 3-12 μm). As a result, the Sabee multi-layered, closely-adjacent continuous filament fabric does not possess the desired open structure and consequent filtration and storage properties of the present invention melt-blown material. It therefore would not have been obvious to simply apply the multi-layered fabric of Sabee to the Kadoya filter, as this combination would not result in the present invention's enhanced overall

filtration performance.³

Because no combination of Kadoya and Sabee would result in the present invention, claims 13 and 35-36 and their dependent claims are patentable over these references under § 103(a). Reconsideration and withdrawal of the pending rejections is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, the Applicant respectfully submits that claims 13, 15-22 and 35-36 are patentable over the cited references and in condition for allowance. Early and favorable consideration and issuance of a Notice of Allowance for these claims is respectfully requested.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit

³ Similarly, the Togashi reference does not teach or suggest the present invention's melt-blown material. Togashi merely describes generally the combination of "sheets" of organic and inorganic materials to form a composite filter, where the only parameters given are specific performance targets, *i.e.*, a trapping efficiency for a certain size particle, and a pore volume ratio. Togashi Abstract. There is nothing presented in this reference to suggest the use of the melt-blown material of the present invention.

Account No. 05-1323 (Docket 037141/48916US).

Date: July 22, 2004

Respectfully submitted,

A handwritten signature in black ink, appearing to read "J.D. Evans", with a long horizontal flourish extending to the right.

J. D. Evans
Registration No. 26,269
Mark H. Neblett
Registration No. 42,028

CROWELL & MORING, LLP
P.O. Box 14300
Washington, DC 20044-4300
Telephone No.: (202) 624-2500
Facsimile No.: (202) 628-8844